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AFFSE REPORT 5/79

Field Evaluation

of

Australian Ration Packs ·

(32)

COMBAT RATION (ONE MAN) 1976/77
EXERCISE TOP POINT

D. J. LICHTENSTEIN

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AFFSE REPORT 5/79

# FIELD EVALUATION OF AUSTRALIAN RATION PACKS COMBAT RATION (ONE MAN) 1976/77 PACKAGING PROGRAMME TRIALLED AT EXERCISE TOP POINT

D. J. LICHTENSTEIN

#### SUMMARY

Menus A, B, C and D of the Combat Ration (One Man) 1976/77 packaging programme were trialled at Exercise Top Point and compared with results from previous trials.

With 2 exceptions these results confirmed previous findings on the acceptability, adequacy and Service suitability of the ration components on trial.

These results suggest the need for designing mock-up ration packs for further field evaluation.

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adequacy and Service suitability of the ration components on trial.

field evaluation.

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# FIELD EVALUATION OF AUSTRALIAN RATION PACKS COMBAT RATION (ONE MAN) 1976/77 PACKAGING PROGRAMME TRIALLED AT EXERCISE TOP POINT

#### INTRODUCTION

The evaluation of rations in the field is a regular activity undertaken by the Armed Forces Food Science Establishment (AFFSE) to ensure that ration items conform, among other things, to satisfactory requirements for user acceptability, adequacy, and Service suitability. Once these parameters have been quantified, changes can be recommended for implementation in the subsequent ration packing programme undertaken by the Services. This occurred for the 1976/77 ration packing programme for the Combat Ration (One Man) following the survey on the 1975/76 ration packing programme (Badcock and Lichtenstein, 1978). Consequently, an initial field user trial of the 76/77 pack was undertaken at Exercise Brahman Drive (Lichtenstein, 1979). The purpose of the present trial was to confirm these previous results.

#### TRIAL AND EVALUATION

A preliminary report on the trial organisation and procedures adopted for the conduct of the trial, has already been detailed (Lichtenstein, 1978). Briefly, there were some administrative problems associated with the conduct of the trial which may have affected the outcome of the trial objectives.

Two (understrength) infantry rifle platoons were selected as user trial subjects. These subjects were drawn from 3 PI A Coy and 5 PI B Coy 2/4 RAR during Exercise Top Point. The trial itself was conducted over a 4 day period to enable each platoon member to have access to and thereby consume each of the 4 varieties of the Combat Ration (One Man) being evaluated — menus A, B, C and D respectively.

Prior to commencing the trial, all sources of food, other than the specific trial ration issue, were removed from the subjects. After allowing for a free interchange of ration components among individual members of each separate platoon, all unconsumed (unopened) ration components which were discarded during the course of the trial, were returned for computation. This produced a consolidated platoon ration discard figure—as each platoon operated as a separate entity during the trial period.

Questionnaires were issued for completion and return at the end of the trial for subsequent analyses. These questionnaires were evaluated as previously described (Badcock and Lichtenstein, 1978). A sample questionnaire is set out at Annex A.

The activities undertaken by the subjects during the trial period were quite strenuous—typical of what could be expected from infantry soldiers engaged in either continental defence or counter revolutionary warfare.

#### RESULTS AND DISCUSSION

#### Analysis of Data

Answers to questions relating to the acceptability, quantity provided and the nature of the packaging of each ration component under investigation, are detailed in Table 1 for both platoons. The computed preference ratings are detailed in Table 2, shown in descending order of decreasing preference. Furthermore, Table 2 also compares actual discards with stated discards determined from answers to individual questionnaires.

Tables 3, 4 and 5 compare the summary acceptability, percent dislike and percent discard data for each of the trial platoons in both Exercises Top Point and Brahman Drive. Comparative data from the previous comprehensive survey on the 75/76 packing programme are also shown.

The similarities or differences in acceptability of each component as evaluated in the major surveys are emphasised in Figure 1.

Generally the data for the platoons in the present trial suggest that they were more critical of the 76/77 pack than their counterparts during Exercise Brahman Drive. This may have been a reflection of the administrative problems encountered during Exercise Top Point. All the new (76/77) items in the pack were rated lower during Exercise Top Point. In fact two of these items, Butter Concentrate and Butterscotch were found to be unacceptable. This is confirmed by other criteria (see Table 2).

Nevertheless, this trial continued to confirm the unacceptability of the Survival Biscuits, Cereal Block and fruit flavoured Drink Powders.

In contrast to the Brahman Drive survey, the actual consolidated platoon discard figures were lower than the users individually thought they were. Accordingly, this aspect of the survey was encouraging, as it indicated that in this instance the users were quite reliable in answering this aspect of the questionnaires.

#### **User Comments**

The comments from each platoon have been combined to reduce the complexity of this aspect of the questionnaire. Only 26% of the respondents failed to make a written comment. Generally the comments were similar to those reported previously (Badcock and Lichtenstein, 1978; Lichtenstein, 1979). Only those not noted previously are considered here.

As reflected by the data on the packaging, the respondents were rather critical of Butterscotch in this respect with 9% including a further comment in the comments section. Two percent considered Butterscotch as a poor replacement for Candy Creamy Fudge. Two percent considered that the Beef and Vegetables were too dry. Two percent, whilst admitting their preference for both the Rice and Potato with Onion Powder, were critical of the time set aside to prepare these items.

In support of some of their criticisms on the packaging, it was recommended by 26% of the respondents that all items should be packaged in camouflage coloured materials. Seven percent recommended the packaging of cheese in a container with a ring pack lid to make it easier to open. A lesser proportion of respondents (2%) suggested that all cans should have this facility. Two percent suggested that canned desserts such as custard, chocolate pudding and banana pudding should be introduced into the pack.

#### RECOMMENDATIONS

These recommendations should be considered along with previous recommendations (Badcock and Lichtenstein, 1978) not yet implemented. Because of the general improvement to the pack, as a result of previous implementations, effort should now be directed to the preparation of mock-up packs with particular emphasis on the incorporation of different canned and snack items not recently incorporated into ration packs.

These packs should then be trialled using a similar group of subjects, but ensuring far more satisfactory technical control over the proceedings.

#### **ACKNOWLEDGEMENTS**

My thanks are to the members of 3 Platoon and 5 Platoon 2/4 RAR for their forbearance in having to consume their ration pack meals in the vicinity of their colleagues consuming a fresh equivalent. Special thanks are accorded to HQ 6 TF and D Trials in particular Maj. M. Johnson.

I was ably assisted in the field by Lt. Col. D. Harveson (Det) AFFSE. I acknowledge also the assistance of Messrs. W. Badcock and D. Dunkley for their analyses of the questionnaires.

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Badcock, W.E and Lichtenstein, D.J. (1978) AFFSE Report 4/78. Lichtenstein, D.J. (1978) R841/1/3 Lichtenstein, D.J. (1979) AFFSE Report 2/79.

TABLE 1

Exercise: Top Point

### COMBAT RATION (ONE MAN) QUESTIONNAIRE RESULTS

Units:- 3 Pl, A Coy, 2/4 RAR

5 PI, B Coy, 2/4 RAR

No. of Subjects = 43

Average Age = 22.6

S.D. = 3.8

Av Yrs Service = 3.6

S.D. = 3.

|                          |                    | ACCE     | PTABILIT      | Υ             |                 |              | ,              | AMOUNT       |               |                 |             |
|--------------------------|--------------------|----------|---------------|---------------|-----------------|--------------|----------------|--------------|---------------|-----------------|-------------|
| ITEMS                    | Acceptabil<br>Mean | S.D.     | %Dis-<br>like | %Not<br>tried | %Not<br>replied | %<br>Alright | %Not<br>enough | %Too<br>much | %Dis-<br>card | %Not<br>replied | %<br>Alrigh |
| Cereal Block             | -0.64              | 1.32     | 53            | 2             | 0               | 51           | 0              | 9            | 40            | 0               | 77          |
| Survival Biscuits        | -0.02              | 1.14     | 30            | 0             | 0               | 58           | 19             | 2            | 21            | 0               | 72          |
| Sweet Biscuits           | 0.76               | 1.24     | 16            | 2             | 2               | 51           | 21             | 12           | 16            | 0               | 63          |
| Butter Concentrate       | 0.05               | 1.26     | 28            | 7             | 0               | 51           | 9              | 9            | 28            | 2               | 74          |
| Cheese                   | 1.47               | 0.91     | 2             | 0             | 0               | 44           | 53             | 2            | 0             | 58              | 37          |
| Chocolate                | 1.05               | 1.05     | 9             | 0             | 0               | 65           | 26             | 0            | 9             | 63              | 14          |
| Chewing Gum              | 0.29               | 1.35     | 26            | 2             | 0               | 58           | 21             | 2            | 19            | 53              | 19          |
| Butterscotch             | -0.33              | 1.43     | 49            | 2             | 0               | 28           | 9              | 14           | 49            | 23              | 23          |
| Sweetened Condensed Milk | 1.60               | 0.85     | 2             | 0             | 0               | 49           | 49             | 0            | 2             | 84              | 0           |
| Sugar                    | 1.50               | 0.86     | 2             | 2             | 0               | 51           | 33             | 12           | 5             | 44              | 23          |
| Tea Bags                 | 1.30               | 0.96     | 9             | 0             | 0               | 70           | 28             | 0            | 2             | 70              | 19          |
| Instant Coffee           | 1.58               | 0.91     | 5             | 0             | 0               | 40           | 56             | 0            | 5             | 63              | 33          |
| Salt                     | 1.08               | 0.96     | 5             | 9             | 0               | 72           | 12             | 2            | 14            | 51              | 30          |
| Instant Rice             | 1.17               | 1.14     | 14            | 5             | 0               | 53           | 30             | 5            | 12            | 91              | 2           |
| Potato with Onion Powder | 1.10               | 1.32     | 16            | 5             | 0               | 56           | 28             | 2            | 14            | 91              | 2           |
| Curry Powder             | 1.26               | 0.94     | 7             | 7             | 2               | 79           | 9              | 0            | 12            | 88              | 7           |
| Orange Drink Powder      | -0.82              | 1.40     | 49            | 21            | 0               | 21           | 7              | 2            | 70            | 86              | 2           |
| Lemon Drink Powder       | -1.03              | 1.17     | 53            | 21            | 0               | 26           | 0              | 5            | 70            | 86              | 2           |
| Lime Drink Powder        | -0.88              | 1.32     | 49            | 23            | 0               | 26           | 2              | 2            | 67            | 86              | 2           |
| Peaches                  | 1.83               | 0.54     | 2             | 0             | 5               | 33           | 63             | 0            | 2             | 40              | 44          |
| Pears                    | I tem no           | t issued |               |               |                 |              |                |              |               |                 |             |
| Two Fruits               | 1.77               | 0.72     | 2             | 0             | 0               | 30           | 67             | 0            | 2             | 0               | 40          |
| Ham and Eggs             | 0.56               | 1.40     | 23            | 0             | 0               | 51           | 35             | 5            | 9             | 0               | 44          |
| Plum Jam                 | 1.00               | 1.01     | 7             | 2             | 0               | 65           | 26             | 0            | 9             | 0               | 98          |
| Beef and Vegetables      | 1.40               | 0.93     | 7             | 0             | 0               | 58           | 42             | 0            | 0             | 0               | 47          |
| Pork and Beans           | 1,10               | 1.19     | 12            | 2             | 0               | 49           | 40             | 2            | 7             | 2               | 51          |
| Raspberry Jam            | 1.10               | 1.03     | 7             | 2             | 0               | 67           | 23             | 0            | 9             | 0               | 91          |
| Corned Beef Hash         | 0.81               | 1.22     | 16            | 0             | 0               | 58           | 28             | 5            | 7             | 2               | 49          |
| Camp Pie                 | 0.74               | 1.14     | 16            | 0             | 0               | 60           | 30             | 0            | 9             | 0               | 53          |
| Apricot Jam              | 0.90               | 1.08     | 9             | 2             | 0               | 63           | 28             | 2            | 7             | 0               | 91          |
| Beef with Gravy          | 0.79               | 1.28     | 16            | 0             | 0               | 49           | 37             | 7            | 7             | 0               | 51          |
| Sausages & Vegetables    | 1.00               | 1.38     | 14            | 0             | 0               | 44           | 47             | 0            | 9             | 0               | 47          |
| Blackberry Jam           | 1.21               | 1.00     | 7             | 2             | 0               | 70           | 21             | 2            | 7             | 0               | 95          |
| Beef Soup Powder         | 1.27               | 1.12     | 7             | 5             | 0               | 60           | 26             | 5            | 9             | 0               | 74          |
| Luncheon Meat            | 0.28               | 1.40     | 30            | 0             | 0               | 63           | 14             | 7            | 14            | 2               | 49          |
| Beef and Eggs            | Item no            |          | 414 (1849)    |               |                 |              |                |              |               |                 |             |
| Peach Jam                | I tem no           |          |               |               |                 |              |                |              |               |                 |             |
| Chicken Soup Powder      | Item no            | 1        |               |               |                 |              |                |              |               |                 |             |
| Corned Beef              | Item no            |          |               |               |                 |              |                |              |               |                 |             |

Overall Average = 0.77

% Married = 26

| %          | %Тоо  | %Тоо    | %Тоо   | %Тоо  | %Not    |
|------------|-------|---------|--------|-------|---------|
| Iright     | shiny | crackly | flimsy | bulky | replied |
| <b>7</b> 7 | 5     | 5       | 5      | 2     | 7       |
| 72         | 5     | 5       | 12     | 0     | 7       |
| <b>6</b> 3 | 5     | 5       | 21     | 0     | 7       |
| 74         | 5     | 5       | 5      | 7     | 5       |
| 37         | 0     | 0       | 0      | 0     | 5       |
| 14         | 14    | 14      | 5      | 0     | 5       |
| 19         | 7     | 7       | 16     | 0     | 5       |
| 23         | 35    | 35      | 5      | 7     | 7       |
| 0          | 2     | 2       | 7      | 2     | 5       |
| 23         | 5     | 5       | 23     | 0     | 5       |
| 19         | 7     | 7       | 0      | 0     | 5       |
| <b>3</b> 3 | 0     | 0       | 0      | 0     | 5       |
| 30         | 2     | 2       | 9      | 0     | 7       |
| 2          | 0     | 0       | 0      | 2     | 5       |
| 2          | 0     | 0       | 0      | 2     | 5       |
| 7          | 0     | 0       | 0      | 0     | 5       |
| 2          | 2     | 2       | 0      | 2     | 7       |
| 2          | 2     | 2       | 0      | 2     | 7       |
| 2          | 2     | 2       | 0      | 2     | 7       |
| 44         | 0     | 0       | 7      | 0     | 9       |
| 40         | 47    | 0       | 9      | 0     | 5       |
| 44         | 51    | 2       | 0      | 0     | 2       |
| 98         | 0     | 0       | 2      | 0     | 0       |
| 47         | 51    | 2       | 0      | 0     | 0       |
| 51         | 49    | 0       | 0      | 0     | 0       |
| 91         | 5     | 2       | 2      | 0     | 0       |
| 49         | 49    | 2       | 0      | 0     | 0       |
| <b>5</b> 3 | 44    | 0       | 2      | 0     | 0       |
| 91         | 2     | 2       | 2      | 0     | 2       |
| 51         | 42    | 5       | 0      | 0     | 2       |
| 47         | 51    | 2       | 0      | 0     | 0       |
| 95         | 2     | 0       | 2      | 0     | 0       |
| 74         | 16    | 2       | 5      | 2     | 0       |
| 49         | 49    | 2       | 0      | 0     | 0       |
|            |       |         |        |       |         |
|            |       |         |        |       |         |

TABLE 2

Exercise: Top Point

#### COMBAT RATION (ONE MAN)

Units: 3 Pl, A Coy, 2/4 RAR 5 Pl, B Coy, 2/4 RAR

#### PREFERENCE RATINGS AND OBJECTIVE DISCARDS

No. of Subjects = 43

| ACCEPTABILITIES          | (Mean Score) | DISLIKES                 | (%Users) | DISCARDS                 | (%Users |
|--------------------------|--------------|--------------------------|----------|--------------------------|---------|
| Peaches                  | 1.8          | Peaches                  | 2        | Cheese                   | 0       |
| Two Fruits               | 1.8          | Two Fruits               | 2        | Beef and Vegetables      | 0       |
| Sweetened Condensed Milk | 1.6          | Sweetened Condensed Milk | 2        | Two Fruits               | 2       |
| Instant Coffee           | 1.6          | Cheese                   | 2        | Peaches                  | 2       |
| Cheese                   | 1.5          | Sugar                    | 2        | Sweetened Condensed Milk | 2       |
| Sugar                    | 1.5          | Instant Coffee           | 5        | Tea Bags                 | 2       |
| Beef and Vegetables      | 1.4          | Salt                     | 5        | Instant Coffee           | 5       |
| Beef Soup Powder         | 1.3          | Beef and Vegetables      | 7        | Sugar                    | 5       |
| Curry Powder             | 1.3          | Beef Soup Powder         | 7        | Blackberry Jam           | 7       |
| Tea Bags                 | 1.3          | Blackberry Jam           | 7        | Pork and Beans           | 7       |
| Blackberry Jam           | 1.2          | Raspberry Jam            | 7        | Apricot Jam              | 7       |
| Instant Rice             | 1.2          | Plum Jam                 | 7        | Beef with Gravy          | 7       |
| Salt                     | 1.1          | Curry Powder             | 8        | Corned Beef Hash         | 7       |
| Raspberry Jam            | 1.1          | Tea Bags                 | 9        | Beef Soup Powder         | 9       |
| Pork and Beans           | 1.1          | Chocolate                | 9        | Raspberry Jam            | 9       |
| Potato with Onion Powder | 1.1          | Apricot Jam              | 10       | Plum Jam                 | . 9     |
| Plum Jam                 | 1.0          | Pork and Beans           | 12       | Chocolate                | 9       |
| Chocolate                | 1.0          | Sausages & Vegetables    | 14       | Sausages & Vegetables    | 9       |
| Sausages & Vegetables    | 1.0          | Instant Rice             | 15       | Camp Pie                 | 9       |
| Apricot Jam              | 0.9          | Beef with Gravy          | 16       | Ham and Eggs             | 9       |
| Beef with Gravy          | 0.8          | Corned Beef Hash         | 16       | Curry Powder             | 12      |
| Corned Beef Hash         | 0.8          | Camp Pie                 | 16       | Instant Rice             | 12      |
| Sweet Biscuits           | 8.0          | Potato with Onion Powder | 17       | Salt                     | 14      |
| Camp Pie                 | 0.7          | Sweet Biscuits           | 17       | Potato with Onion Powder | 14      |
| Ham and Eggs             | 0.6          | Ham and Eggs             | 23       | Luncheon Meat            | 14      |
| Chewing Gum              | 0.3          | Chewing Gum              | 26       | Sweet Biscuits           | 16      |
| Luncheon Meat            | 0.3          | Luncheon Meat            | 30       | Chewing Gum              | 19      |
| Survival Biscuits        | 0.0          | Survival Biscuits        | 30       | Survival Biscuits        | 21      |
| Butter Concentrate       | 0.0          | Butter Concentrate       | 30       | Butter Concentrate       | 28      |
| Butterscotch             | -0.3         | Butterscotch             | 50       | Cereal Block             | 40      |
| Cereal Block             | -0.6         | Cereal Block             | 55       | Butterscotch             | 49      |
| Orange Drink Powder      | -0.8         | Orange Drink Powder      | 62       | Lime Drink Powder        | 67      |
| Lime Drink Powder        | -0.9         | Lime Drink Powder        | 64       | Orange Drink Powder      | 70      |
| Lemon Drink Powder       | -1.0         | Lemon Drink Powder       | 68       | Lemon Drink Powder       | 70      |

| DISCARDS                | (%Components) |
|-------------------------|---------------|
| Peaches                 | 0             |
| Two Fruits              | 0             |
| Cheese                  | 0             |
| Beef and Vegetables     | 0             |
| Pork and Beans          | 0             |
| Potato with Onion Power | der 0         |
| Sausages & Vegetables   | 0             |
| Corned Beef Hash        | 0             |
| Beef with Gravy         | 0             |
| Camp Pie                | 0             |
| Ham and Eggs            | 0             |
| Luncheon Meat           | 0             |
| Sweetened Condensed M   | lilk 1        |
| Chocolate               | 1             |
| Sweet Biscuits          | 2             |
| Blackberry Jam          | 3             |
| Raspberry Jam           | 3             |
| Beef Soup Powder        | 5             |
| Sugar                   | 7             |
| Instant Rice            | 7             |
| Apricot Jam             | 7             |
| Instant Coffee          | 8             |
| Plum Jam                | 8             |
| Curry Powder            | 9             |
| Tea Bags                | 10            |
| Chewing Gum             | 10            |
| Survival Biscuits       | 12            |
| Salt                    | 15            |
| Cereal Block            | 20            |
| Butter Concentrate      | 25            |
| Butterscotch            | 27            |
| Orange Drink Powder     | 28            |
| Lime Drink Powder       | 47            |
| Lemon Drink Powder      | 49            |
|                         |               |

a.

TABLE 3

EXERCISE TOP POINT-SUMMARY: ACCEPTABILITY-COMPARISONS WITH PREVIOUS SURVEYS

| Ration Packing Programme<br>Exercises     | 75,<br>All Other | /76<br>Exercises |              | i/77<br>an Drive |              | /77<br>Point |
|---|------------------|------------------|--------------|------------------|--------------|--------------|
| Sub-units                                 | Average          | Average          | 5 PI, B Coy  | 8 PI, C Coy      | 3 PI, A Coy  | 5 PI, B Coy  |
|   | All Units        | Battalions       | 6 RAR        | 8/9 RAR          | 2/4 RAR      | 2/4 RAR      |
| Average Age                               | 23.8             | 22.9             | 20.8         | 22.3             | 23.0         | 22.1         |
| Av Yrs Service                            | 4.7              | 4.0              | 2.9          | 3.1              | 4.1          | 3.1          |
| Percent Married                           | 41               | 31               | 25           | 32               | 27           | 24           |
| No of Subjects                            | 2346             | 1398             | 20           | 22               | 22           | 21           |
| Cereal Block                              | -0.28            | -0.56            | -0.88        | -0.68            | -0.92        | -0.40        |
| Survival Biscuits                         | -0.36            | -0.56            | -0.60        | 0.32             | 0.32         | -0.40        |
| Sweet Biscuits                            | 0.84             | 0.80             | 0.76         | 0.96             | 0.68         | 0.84         |
| Butter Concentrate                        | ****             | ****             | 0.84         | 0.80             | -0.16        | 0.24         |
| Cheese                                    | 1.56             | 1.52             | 1.20         | 1.56             | 1.68         | 1.24         |
| Chocolate                                 | 1.00             | 0.84             | 0.96         | 0.92             | 1.00         | 1.08         |
| Chewing Gum                               | 0.92             | 0.88             | 0.32         | 0.60             | 0.20         | 0.40         |
| Candy Creamy Fudge                        | -0.28            | -0.60            | ****         | ****             | ****         | ****         |
| Butterscotch                              | ****             | ***              | 1.20         | 1.00             | -0.04        | -0.64        |
| Sweetened Condensed Milk                  | 1.64             | 1.72             | 1,16         | 1.44             | 1.52         | 1.72         |
| Sugar                                     | 1.64             | 1.76             | 1.20         | 1.28             | 1.52         | 1.52         |
| Tea Bags                                  | 1.32             | 1.28             | 1,44         | 1.08             | 1.36         | 1.24         |
| Instant Coffee                            | 1.56             | 1.60             | 1.36         | 1.32             | 1.40         | 1.76         |
| Salt                                      | 1.20             | 1.28             | 0.72         | 0.64             | 1.20         | 0.96         |
| Instant Rice                              | 1.12             | 1.12             | 0.28         | 1.40             | 1.32         | 1.00         |
| Potato with Onion Powder                  | ****             | ****             | 1.36         | 1.68             | 1.04         | 1.16         |
| Curry Powder                              | 0.84             | 0.92             | 0.48         | 0.64             | 1.32         | 1.16         |
| Orange Drink Powder                       | 0.44             | 0.20             | 1,00         | -0.16            | -1.20        | -0.48        |
| Lemon Drink Powder                        | 0.40             | 0.16             | 0.72         | -0.08            | -1.08        | -1.00        |
| Lime Drink Powder                         | 0.32             | 0.12             | 1.00         | -0.08            | -1.12        | -0.68        |
| Peaches                                   | ****             | ****             | 2.00         | 2.00             | 1.92         | 1.76         |
| Pears                                     | ****             | ****             | 2.00         | 2.00             | ****         | ****         |
| Two Fruits                                | ****             | ****             | 2.00         | 2.00             | 1.92         | 1.60         |
| Ham and Eggs                              | 0.44             | 0.28             | 0.56         | 0.08             | 0.28         | 0.84         |
| Plum Jam                                  | 0.96             | 0.84             | 1.24         | 1.20             | 1.24         | 0.76         |
| Beef and Vegetables                       | 1.32             | 1.32             | 0.92         | 1.52             | 1.56         | 1.24         |
| Pork and Beans                            | 1.04             | 1.04             | 0.64         | 0.64             | 1.08         | 1.12         |
| Raspberry Jam                             | 1.08             | 0.96             | 1,32         | 1.36             | 1.40         | 0.76         |
| Corned Beef Hash                          | 0.68             | 0.52             | 0.76         | 0.36             | 0.96         | 0.68         |
| Camp Pie                                  | 0.52             | 0.56             | 0.70         | -0.04            | 0.80         | 0.68         |
| Apricot Jam                               | 0.52             | 0.84             | 1,32         | 1.04             | 1.04         | 0.76         |
| Beef with Gravy                           | 1.04             | 0.92             |              | 1.36             | 0.60         | 1.00         |
|   |                  | 0.32             | 0.64         | 1.52             | II.          | 1.44         |
| Sausages and Vegetables<br>Blackberry Jam | 0.84<br>1.08     | 0.76             | 0.76<br>1.24 | 1.08             | 0.60<br>1.36 | 1.04         |
| Beef Soup Powder                          |                  | 0.96             |              | 0.92             | The same of  | 1.20         |
| Luncheon Meat                             | 1.08             | 0.96             | 0.76         | 0.92             | 1.32         | 0.32         |
|   | 0.40             |                  | -0.64        |                  | 0.24         | U.32<br>**** |
| Beef and Eggs<br>Peach Jam                | 0.52             | 0.36             | 0.52         | 0.24             | ****         | ****         |
|   | 0.92             | 0.80             | 1.20         | 1.08             | ****         | ****         |
| Chicken Soup Powder<br>Corned Beef        | 1.16<br>0.36     | 1.04<br>0.00     | 1.00<br>0.00 | 1.20<br>-0.04    | ****         | ****         |
| Overall Average                           | 0.83             | 0.73             | 0.85         | 0.88             | 0.78         | 0.76         |

TABLE 4

EXERCISE TOP POINT-SUMMARY: PERCENT DISLIKE-COMPARISONS WITH PREVIOUS SURVEYS

| Ration Packing Programme<br>Exercises |           | /76<br>Exercises | 76/<br>Brahma |             | 76/77<br>Top Point |             |  |
|---------------------------------------|-----------|------------------|---------------|-------------|--------------------|-------------|--|
| Sub-units                             | Average   | Average          | 5 PI, B Coy   | 8 PI, C Coy | 3 PI, A Coy        | 5 PI, B Coy |  |
|                                       | All Units | Battalions       | 6 RAR         | 8/9 RAR     | 2/4 RAR            | 2/4 RAR     |  |
| Average Age                           | 23.8      | 22.9             | 20.8          | 22.3        | 23.0               | 22.1        |  |
| Av Yrs Service                        | 4.7       | 4.0              | 2.9           | 3.1         | 4.1                | 3.1         |  |
| Percent Married                       | 41        | 31               | 25            | 32          | 27                 | 24          |  |
| No of Subjects                        | 2346      | 1398             | 20            | 22          | 22                 | 21          |  |
| Cereal Block                          | 47        | 55               | 60            | 55          | 59                 | 48          |  |
| Survival Biscuits                     | 47        | 54               | 50            | 18          | 23                 | 38          |  |
| Sweet Biscuits                        | 17        | 18               | 15            | 14          | 18                 | 14          |  |
| Butter Concentrate                    | **        | **               | 10            | 9           | 36                 | 19          |  |
| Cheese                                | 3         | 4                | 10            | o           | 0                  | 5           |  |
| Chocolate                             | 13        | 17               | 10            | 14          | 9                  | 10          |  |
| Chewing Gum                           | 12        | 14               | 20            | 14          | 27                 | 24          |  |
| Candy Creamy Fudge                    | 49        | 58               | **            | **          | **                 | **          |  |
| Butterscotch                          | **        | **               | 0             | 14          | 45                 | 52          |  |
| Sweetened Condensed Milk              | 3         | 2                | 5             | 0           | 5                  | 0           |  |
| Sugar                                 | 2         | 1                | 0             | 0           | 5                  | 0           |  |
| Tea Bags                              | 9         | 10               | 0             | 5           | 9                  | 10          |  |
| Instant Coffee                        | 7         | 6                | 5             | 0           | 9                  | 0           |  |
| Salt                                  | 3         | 3                | 5             | 5           | 5                  | 5           |  |
| Instant Rice                          | 11        | 11               | 20            | 5           | 9                  | 19          |  |
| Potato with Onion Powder              | **        | **               | 5             | 0           | 18                 | 14          |  |
| Curry Powder                          | 17        | 16               | 15            | 18          | 5                  | 10          |  |
| Orange Drink Powder                   | 28        | 34               | 5             | 36          | 50                 | 48          |  |
| Lemon Drink Powder                    | 29        | 35               | 15            | 36          | 45                 | 62          |  |
| Lime Drink Powder                     | 31        | 36               | 5             | 36          | 45                 | 52          |  |
| Peaches                               | **        | **               | 0             | 0           | 0                  | 5           |  |
| Pears                                 | **        | **               | 0             | 0           | **                 | **          |  |
| Two Fruits                            | **        | **               | 0             | o           | 0                  | 5           |  |
| Ham and Eggs                          | 29        | 32               | 30            | 32          | 32                 | 14          |  |
| Plum Jam                              | 10        | 13               | 0             | 5           | 0                  | 14          |  |
| Beef and Vegetables                   | 7         | 7                | 20            | 0           | 5                  | 10          |  |
| Pork and Beans                        | 14        | 15               | 25            | 23          | 18                 | 5           |  |
| Raspberry Jam                         | 8         | 10               | 0             | 5           | 0                  | 14          |  |
| Corned Beef Hash                      | 23        | 27               | 20            | 32          | 18                 | 14          |  |
| Camp Pie                              | 26        | 26               | 30            | 41          | 14                 | 19          |  |
| Apricot Jam                           | 10        | 12               | 0             | 9           | 5                  | 14          |  |
| Beef with Gravy                       | 14        | 17               | 20            | 5           | 27                 | 5           |  |
| Sausages and Vegetables               | 20        | 23               | 25            | 0           | 23                 | 5           |  |
| Blackberry Jam                        | 9         | 11               | 0             | 9           | 0                  | 14          |  |
| Beef Soup Powder                      | 9         | 11               | 10            | 14          | 5                  | 10          |  |
| Luncheon Meat                         | 29        | 32               | 55            | 36          | 32                 | 29          |  |
| Beef and Eggs                         | 29        | 31               | 30            | 36          | **                 | **          |  |
| Peach Jam                             | 11        | 14               | 0             | 5           | **                 | **          |  |
| Chicken Soup Powder                   | 9         | 10               | 5             | 9           | **                 | **          |  |
| Corned Beef                           | 32        | 41               | 40            | 41          | **                 | **          |  |
| Overall Average                       | 18        | 21               | 14            | 15          | 18                 | 18          |  |

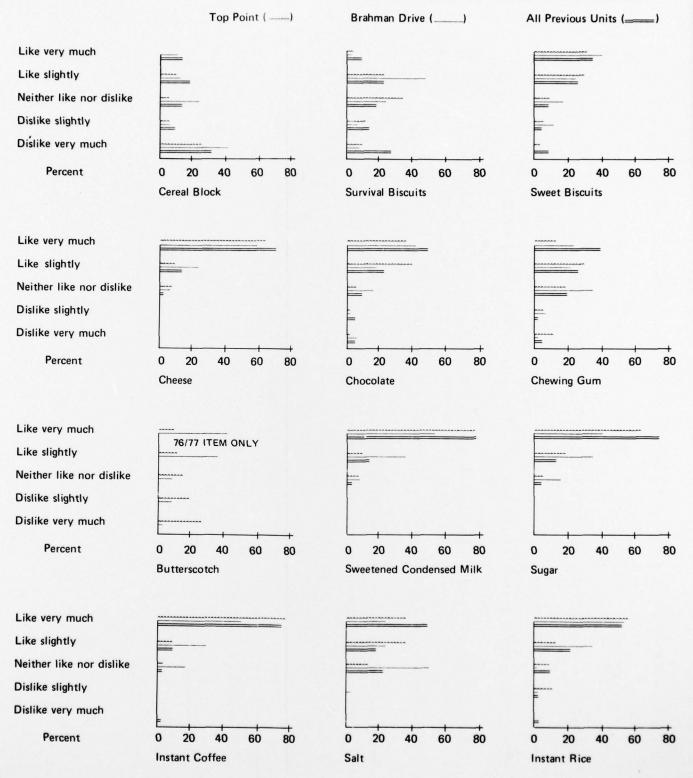


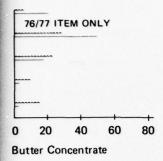
TABLE 5

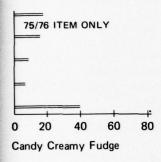
EXERCISE TOP POINT-SUMMARY: PERCENT DISCARD-COMPARISONS WITH PREVIOUS SURVEYS

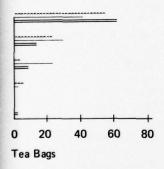
| Ration Packing Programme Exercises | 75/<br>All Other     |                       |         | 76.<br>Brahma | /77<br>in Drive |              |         | 76/<br>Top F |      |              |
|------------------------------------|----------------------|-----------------------|---------|---------------|-----------------|--------------|---------|--------------|------|--------------|
| Sub-units                          | Average<br>All Units | Average<br>Battalions | 5 PI, E |               |                 | C Coy<br>RAR | 3 PI, A |              |      | B Coy<br>RAR |
| Average Age                        | 23.8                 | 22.9                  | 20      | 8.0           |                 | 2.3          | 23      | 0            | 2    | 2.1          |
| Av Yrs Service                     | 4.7                  | 4.0                   |         | 2.9           |                 | 3.1          |         | .1           |      | 3.1          |
| Percent Married                    | 41                   | 31                    | 1       | 25            |                 | 32           | 1       | 27           |      | 24           |
| No of Subjects                     | 2346                 | 1398                  |         | 20            |                 | 22           |         | 22           |      | 21           |
| 140 of Subjects                    | 2340                 | 1390                  |         | 20            |                 | -            |         |              |      |              |
| 0 101 1                            | Ques                 | Ques                  | Ques    | Count         | Ques            | Count        | Ques    | Count        | Ques | Count        |
| Cereal Block                       | 38                   | 44                    | 40      | 54            | 50              | 58           | 50      | 16           | 29   | 23           |
| Survival Biscuits                  | 22                   | 27                    | 40      | 41            | 9               | 48           | 18      | 0            | 24   | 23           |
| Sweet Biscuits                     | 8                    | 8                     | 0       | 14            | 0               | 15           | 27      | 2            | 5    | 2            |
| Butter Concentrate                 | **                   | **                    | 10      | 35            | 14              | 16           | 41      | 18           | 14   | 31           |
| Cheese                             | 2                    | 3                     | 5       | 5             | 0               | 3            | 0       | 0            | 0    | 0            |
| Chocolate                          | 7                    | 9                     | 10      | 7             | 14              | 16           | 9       | 1            | 10   | 1            |
| Chewing Gum                        | 14                   | 17                    | 10      | 45            | 18              | 41           | 18      | 10           | 19   | 10           |
| Candy Creamy Fudge                 | 36                   | 39                    | **      | **            | **              | **           | **      | 18           | **   | 35           |
| Butterscotch                       | **                   | **                    | 0       | 3             | 14              | 7            | 45      | **           | 52   | **           |
| Sweetened Condensed Milk           | 2                    | 2                     | 0       | 5             | 0               | 13           | 5       | 2            | 0    | 0            |
| Sugar                              | 3                    | 1                     | 0       | 26            | 0               | 27           | 5       | 6            | 5    | 7            |
| Tea Bags                           | 9                    | 9                     | 0       | 19            | 9               | 10           | 5       | 11           | 0    | 8            |
| Instant Coffee                     | 4                    | 3                     | 0       | 19            | 5               | 9            | 5       | 14           | 5    | 1            |
| Salt                               | 7                    | 6                     | 5       | 35            | 0               | 25           | 9       | 10           | 19   | 20           |
| Instant Rice                       | 10                   | 9                     | 20      | 57            | 5               | 12           | 9       | 0            | 14   | 13           |
| Potato with Onion Powder           | **                   | **                    | 5       | 5             | 0               | 5            | 18      | 0            | 10   | 0            |
| Curry Powder                       | 15                   | 14                    | 25      | 45            | 9               | 35           | 14      | 7            | 10   | 11           |
| Orange Drink Powder                | 25                   | 28                    | 10      | 20            | 32              | 48           | 86      | 27           | 52   | 29           |
| Lemon Drink Powder                 | 25                   | 30                    | 10      | 15            | 32              | 36           | 86      | 41           | 52   | 57           |
| Lime Drink Powder                  | 25                   | 30                    | 5       | 20            | 32              | 41           | 82      | 32           | 52   | 62           |
| Peaches                            | **                   | **                    | 0       | 0             | 0               | 0            | 0       | 0            | 5    | 0            |
| Pears                              | **                   | **                    | 0       | 0             | 0               | ő            | **      | **           | **   | **           |
| Two Fruits                         | **                   | **                    | 0       | 0             | 0               | 0            | 0       | 0            | 5    | 0            |
| Ham and Eggs                       | 15                   | 19                    | 15      | 5             | 23              | 5            | 18      | 0            | 0    | 0            |
| Plum Jam                           | 11                   | 12                    | 0       | 25            | 5               | 14           | 5       | 5            | 14   | 10           |
| Beef and Vegetables                | 2                    | 2                     | 5       | 0             | 0               |              | 0       | 0            | 0    | 0            |
| Pork and Beans                     | 6                    | 8                     | 0       | 0             | 9               | 0            |         |              | 0    | 0            |
| Raspberry Jam                      | 10                   | 12                    |         |               |                 | 0            | 14      | 0            | 19   |              |
| Corned Beef Hash                   | 8                    |                       | 0       | 15            | 0               | 0            | 0       | 0            |      | 5            |
|                                    |                      | 11                    | 5       | 0             | 5               | 0            | 9       | 0            | 5    | 0            |
| Camp Pie                           | 11                   | 14                    | 15      | 10            | 18              | 15           | 9       | 0            | 10   | 0            |
| Apricot Jam                        | 12                   | 14                    | 0       | 30            | 0               | 27           | 0       | 0            | 14   | 14           |
| Beef with Gravy                    | 7                    | 8                     | 10      | 0             | 0               | 0            | 14      | 0            | 0    | 0            |
| Sausages and Vegetables            | 8                    | 11                    | 0       | 0             | 0               | 0            | 14      | 0            | 5    | 0            |
| Blackberry Jam                     | 10                   | 13                    | 0       | 20            | 0               | 8            | 0       | 0            | 14   | 5            |
| Beef Soup Powder                   | 12                   | 13                    | 5       | 45            | 9               | 14           | 0       | 5            | 19   | 0            |
| Luncheon Meat                      | 14                   | 18                    | 25      | 10            | 18              | 0            | 14      | 0            | 14   | 0            |
| Beef and Eggs                      | 13                   | 18                    | 5       | 10            | 23              | 9            | **      | **           | **   | **           |
| Peach Jam                          | 13                   | 15                    | 0       | 25            | 0               | 32           | **      | **           | **   | **           |
| Chicken Soup Powder                | 11                   | 12                    | 10      | 50            | 9               | 22           | **      | **           | **   | **           |
| Corned Beef                        | 16                   | 21                    | 15      | 15            | 18              | 5            | **      | **           | **   | **           |
| Overall Average                    | 13                   | 15                    | 8       | 19            | 10              | 16           | 19      | 7            | 15   | 11           |

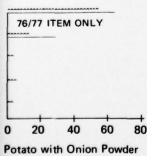
FIGURE 1
ACCEPTABILITY COMPARISONS OF INDIVIDUAL COMPONENTS







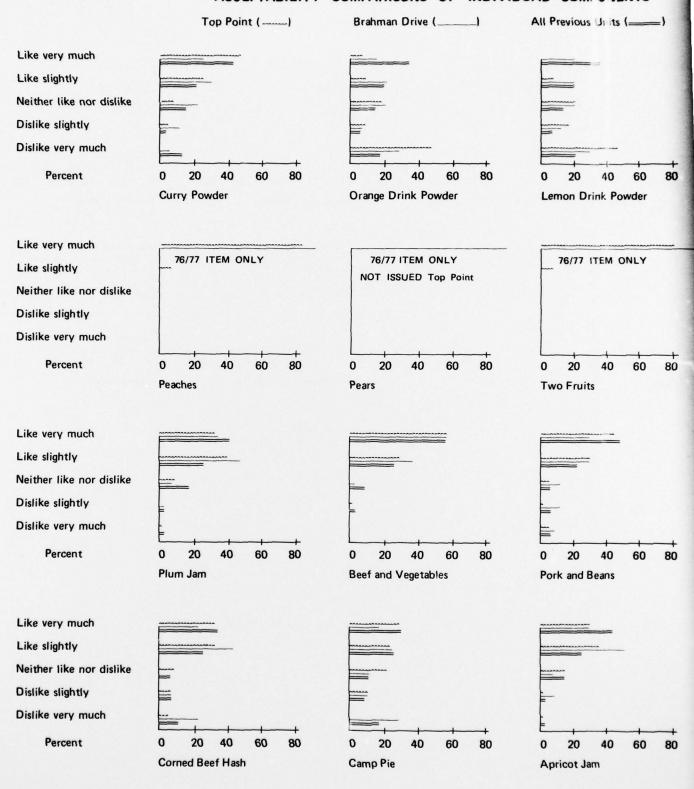


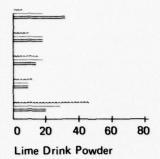


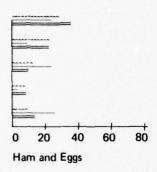
Potato with Onion Powder (Continued)

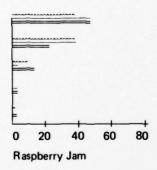
FIGURE 1 (Continued)

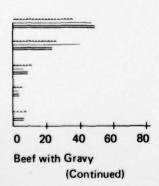
#### ACCEPTABILITY COMPARISONS OF INDIVIDUAL COMPONENTS



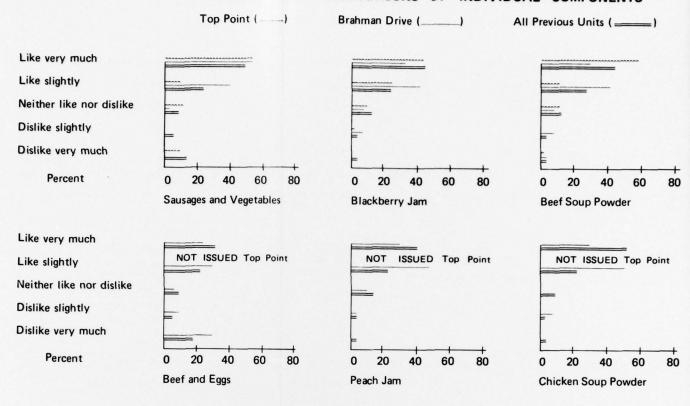


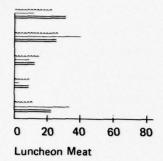




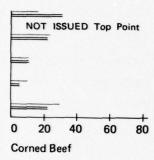


# ACCEPTABILITY COMPARISONS OF INDIVIDUAL COMPONENTS





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Please tick whichever boxes (in each of the three sets) you think

|  |                 |                   |                |                    |        |              |               | I EIVIS          | COMIN              | ON TO       | ) 101        | KE IM             | AN    |
|--|-----------------|-------------------|----------------|--------------------|--------|--------------|---------------|------------------|--------------------|-------------|--------------|-------------------|-------|
| QUALITY Like Extremely Like Moderately Neither Like Nor Dislike Dislike Moderately Dislike Extremely Did Not Try It        | Cereal<br>Block | Survival Biscuits | Sweet Biscuits | Butter Concentrate | Cheese | Chocolate    | Chewing Gum   | Butter Scotch    | Sweet'd Con'd Milk | Sugar       | lina<br>Bigs | Instant<br>Coffee | Selt  |
| AMOUNT  Not Enough  About Right  Too Much  Discarded It  PACKAGING   |                 |                   |                |                    |        |              |               |                  |                    |             |              |                   | 0000  |
| Satisfactory Too Shiny Too Crackly Too Flimsy Too Bulky  |                 |                   |                |                    |        |              |               |                  |                    |             |              |                   | 00000 |
|  |                 |                   | Menu A         |                    |        | N            | lenu B        |                  |                    |             | Menu C       |                   |       |
| QUALITY Like Extremely Like Moderately Neither Like Nor Dislike Dislike Moderately Dislike Extremely Did Not Try It AMOUNT |                 | Ham<br>& Eggs     | Plum<br>Jam    | Beef<br>& Vegs     |        | Pork & Beans | Raspberry Jam | Corned Beef Hash |                    | Camp<br>Pie | Apricot Jam  | Beef with Gravy   |       |
| Not Enough About Right Too Much Discarded It   |                 |                   |                |                    |        |              |               |                  |                    |             |              |                   |       |
| PACKAGING Satisfactory Too Shiny Too Crackly   |                 |                   |                |                    |        |              |               |                  |                    |             | 00           | 0 0               |       |

nk describe the particular food item best.

ONE VARIETY

| 1211 |                       |                          |                        |                           |                    |                         |              |                           |                |
|------|-----------------------|--------------------------|------------------------|---------------------------|--------------------|-------------------------|--------------|---------------------------|----------------|
|      | Instant Rice          | Potato With Onior Powder | Curry<br>Powder        | Orange<br>Drink<br>Powder | Lemon Drink Powder | Lime<br>Drink<br>Powder | Peaches      | Pears                     | Two<br>Fruits  |
| ]    |                       |                          |                        |                           |                    |                         |              |                           |                |
|      |                       |                          |                        |                           |                    |                         |              |                           |                |
|      |                       | Men                      | u D                    |                           |                    |                         | Men          | u E                       |                |
|      | Sausages<br>&<br>Vegs | Blackberry<br>Jam        | Beef<br>Soup<br>Powder | Luncheon<br>Meat          |                    | Beef<br>&<br>Egg        | Peach<br>Jam | Chicken<br>Soup<br>Powder | Corned<br>Beef |
|      |                       |                          |                        |                           |                    |                         |              |                           |                |
|      |                       |                          | _                      | _                         |                    |                         | _            |                           |                |

Years of Service .....

Annex A

# Armed Forces Food Science Establishment Scottsdale, Tasmania

# COMBAT RATION (ONE MAN) USER QUESTIONNAIRE

| 1.                            | As a consumer of the rations you are in the best position to advise us on any changes that should be made. |  |  |  |  |  |  |  |  |
|-------------------------------|--|--|--|--|--|--|--|--|--|
| 2.                            | Please complete this questionnaire by recording your honest reactions.                                     |  |  |  |  |  |  |  |  |
| 3.                            | B. All answers will be treated as confidential.  |  |  |  |  |  |  |  |  |
|                               |  |  |  |  |  |  |  |  |  |
| Name                          | and Rank   |  |  |  |  |  |  |  |  |
| Unit                          | Squadron ARA Company Regiment Corps ARA ARes   |  |  |  |  |  |  |  |  |
| (Delete words not applicable) |  |  |  |  |  |  |  |  |  |
| Age                           |  |  |  |  |  |  |  |  |  |

| Comments:   |      |
|---|------|
| Please tell us what aspects of the rations you found faulty. Can you suggest any improvements? (Include any "extras" that you may have taken with you |      |
| into the field).  |      |
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Thank you for your help. When the results are gathered and analysed, your thoughts could be important in improving the ration packs.

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| (e) Director of Infantry  | 2      | ADELAIDE, S.A. 5035<br>51 Sup Bn,   | 1      |
| (f) Director of Catering  | 1      | Irwin Barracks,   |        |
| (g) Scientific Adviser — Army   | 1      | KARRAKATTA, W.A. 6010   | 1      |
| Department of Defence (Air Force Office)  |        | Headquarters, 6 Military District,  |        |
| Russell Offices,  |        | Anglesea Barracks,  |        |
| CANBERRA, A.C.T. 2600   |        | HOBART, Tas. 7002   | 1      |
| (a) Air Force Scientific Adviser (b) Director of Catering and Services              | 1      | Headquarters, 7 Military District,  |        |
| (DCATSERV-AF)   | 2      | Larrakeyah Barracks,<br>DARWIN, N.T. 5790   | 1      |
| Senior Librarian  |        | Royal Military College,   |        |
| Aeronautical Research Laboratories,<br>P.O. Box 4331,                               |        | DUNTROON, A.C.T. 2600   |        |
| MELBOURNE, Vic. 3001  | 1      | (a) The Librarian,  |        |
| Senior Librarian,<br>Defence Research Centre,                                       |        | Bridges Memorial Library (b) The Faculty Admin Officer,   | 1      |
| G.P.O. Box 2151,  |        | Faculty of Military Studies   | 1      |
| ADELAIDE, S.A. 5001   | 1      | Commandant,   |        |
| Joint Tropical Trials and Research Establishment, P.O. Box 931,                     |        | Australian Staff College,<br>FORT QUEENSCLIFFE, Vic. 3255                                       | 2      |
| INNISFAIL, Qld. 4860  | 1      | Commanding Officer/Chief Instructor,  |        |
| Directorate of Supply (Technical Services),<br>Department of Defence (Army Office), |        | RAAOC Centre,<br>Milpo.   |        |
| G.P.O. Box 1932R,   |        | BANDIANA, Vic. 3662   | 2      |
| MELBOURNE, Vic. 3001  | 2      | Commandant,   |        |
| Supply Division, HQ Logistic Command,   |        | RAAF Staff College,<br>RAAF Base, Fairbairn,  |        |
| St. James Plaza,  |        | CANBERRA, A.C.T. 2600   | 2      |
| G.P.O. Box 1932R,<br>MELBOURNE, Vic. 3001   | 1      | Director,<br>Institute of Aviation Medicine,  |        |
| Directorate of Army Health Services,  |        | POINT COOK, RAAF, Vic. 3029   | 2      |
| G.P.O. Box 1932R,<br>MELBOURNE, Vic. 3001   | 2      |   |        |
| The Director of Naval Victualling,  | 2      | CIVILIAN ESTABLISHMENTS   |        |
| Department of Defence (Navy Office),  |        | The Librarian,  |        |
| Victoria Barracks,<br>St. Kilda Road,   |        | CSIRO,<br>Tasmanian Regional Laboratory,  |        |
| MELBOURNE, Vic. 3004  | 2      | Stowell Avenue,<br>HOBART, Tas. 7000  | 1      |
| Headquarters, Field Force Command,  |        | The Librarian.  |        |
| Victoria Barracks,  |        | CSIRO Division of Food Research,  |        |
| PADDINGTON, N.S.W. 2021   | 3      | P.O. Box 52,<br>NORTH RYDE, N.S.W. 2113   | 1      |
| Headquarters,<br>Logistic Command,  |        | The Librarian,  |        |
| St. James Plaza,<br>G.P.O. Box 1932R,   |        | CSIRO Dairy Research Laboratory,<br>P.O. Box 20,  |        |
| MELBOURNE, Vic. 3001  | 3      | HIGHETT, Vic. 3190  | 1      |
| Headquarters,   |        | Aust. Government Analyst,   |        |
| Training Command,<br>Victoria Barracks,   |        | Department of Science,<br>P.O. Box 449,   |        |
| PADDINGTON, N.S.W. 2021   | 1      | WODEN, A.C.T. 2606  | 1      |

| CIVILIAN ESTABLISHMENTS Cont'd.  |   | OVERSEAS ESTABLISHMENTS Cont'd.  |        |
|--|---|--|--------|
| Dr. R. I. Garrod,  |   | BRITAIN Cont'd.  |        |
| Department of Science,<br>568 St. Kilda Road,<br>MELBOURNE, Vic. 3004  | 1 | The Librarian,<br>Food Research Institute,<br>Colney Lane,   |        |
| The Central Library, Department of Health, P.O. Box 100,   |   | Norwich,<br>Norfolk NR4 7UA, England   | 1      |
| WODEN, A.C.T. 2606 Dr. R. C. Hutchinson, Derwentlaken Road,  | 2 | Superintendent, Foods and Nurrition Division, Laboratory of the Government Chemist, Cornwall House, Stamford Street,     |        |
| GREGSON, Tas. 7402 State Library of Tasmania   | 1 | London SE1 9NQ, England.   | 6      |
| 91 Murray Street,<br>HOBART, Tas. 7000   |   | The Librarian, A.R.C. Meat Research Institute, Langford. Bristol, BS18 7DY, England                                      | 1      |
| (a) Tasmanian Collection     (b) Serials Section     Serials Library,  | 1 | Dr. D. J. McWeeny, Ministry of Agriculture, Fisheries and Food, Food Leboratory, Haldin House,                           |        |
| State Library of Queensland,<br>William Street,<br>BRISBANE, Qld. 4000   | 1 | Queen Street,<br>Norwich, Norfolk, NR2 4SK, England  | 1      |
| Reference Section,<br>Hellyer Regional Library,<br>Alexander Street,   |   | Mr. R. E. Goodman,<br>Food Science Division,<br>Ministry of Agriculture, Fisheries and Food,<br>Great Westminster House, |        |
| BURNIE, Tas. 7320<br>Director,   | 1 | Horseferry Road,<br>London, SW1P 2AE, England  | 1      |
| Food Preservation Laboratory, Department of Primary Industries, HAMILTON, Qld. 4000 Head,                              | 1 | The Librarian, National College of Food Technology, University of Reading,   | -      |
| Food School, East Sydney Technical College, Forbes Street,   |   | Surrey, England The Director,  |        |
| DARLINGHÜRST, N.S.W. 2010<br>Professor R. A. Edwards,  | 1 | Tropical Products Institute,<br>Gray's Inn Road,<br>London, WC1X 8LU, England  | 1      |
| Head, School of Food Technology,<br>University of New South Wales,<br>KENSINGTON, N.S.W. 2033                          | 1 | CANADA  National Defence Headquarters,   |        |
| Preliminary Processing,<br>National Library of Australia,<br>CANBERRA, A.C.T. 2600                                     | 2 | Ottawa, Ontario, K1A OK2  (a) Major Jean Wallace   |        |
| Serials, Biomedical Library,<br>University of New South Wales,   |   | (DCGE 3-4)<br>(b) D Food S   | 2<br>1 |
| KENSINGTON, N.S.W. 2033 The Medical Library,   | 1 | (c) DGOS Technical Library  SRI LANKA  | 1      |
| Flinders University of South Australia,<br>BEDFORD PARK, S.A. 5042   | 1 | Director, Food Research and Nutrition Council, C/- Food Commissioner, Union Place, Colombo, Sri Lanka                    | 1      |
| OVERSEAS ESTABLISHMENTS  |   |  |        |
| BRITAIN  |   | FEDERAL REPUBLIC OF GERMANY  |        |
| Australian Army Representative,<br>Australia House,<br>Strand.   |   | Armed Services Food Chemist,<br>89 Supply Depot, RAOC (BFPO 40)<br>Viersen,  |        |
| London, WC2 B4LA, England  | 1 | Federal Republic of Germany  | 1      |
| Director of Supplies of Transport (FMV),<br>Section 82B, Room 1235,<br>Ministry of Defence,<br>Empress State Building. |   | GHANA  Defence Adviser, Ghana High Commission,   |        |
| London, SW6 1TR, England Adviser in Nutrition,   | 1 | 13 Belgrave Square,<br>London, SW1X 8PR, England   | 5      |
| AMD5, (Army Dept), Ministry of Defence,<br>Landsdowne House, Berkeley Square,<br>London, W1, England                   | 1 | INDIA Director General,  |        |
| Deputy Chief Scientist (Army),<br>SAG (A) 3b,<br>Ministry of Defence,  |   | Research and Development Organisation,<br>Ministry of Defence,<br>New Delhi, 11  | 2      |
| Main Building, Whitehall,<br>London SW 1A 2HB, England<br>The Director,  | 1 | The Director, Defence Food Research Laboratory, Jyothi Nagar,  |        |
| Army Personnel Research Establishment,<br>C/- Royal Aircraft Establishment,<br>Farnborough, Hants, England             | , | Mysore 570 010, India  | 2      |
| The Information Officer, British Food Manufacturing Industries   |   | MALAYSIA  Director, Defence Research Centre.   |        |
| Research Association,<br>Randalls Road, Leatherhead,<br>Surrey, KT227RY, England                                       | 1 | Ministry of Defence,<br>Rifle Range Road,<br>Kuala Lumpur, Malaysia  | 3      |
|  |   | . Add Edinpar, marayara  | 3      |

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#### OVERSEAS ESTABLISHMENTS Cont'd.

#### **NEW ZEALAND PHILIPPINES** Chief Scientist, Science Research Supervisor, Defence Science Organisation, DSIR, P.O. Box 8010, Wellington, New Zealand Food Research Division, Food and Nutrition Research Institute, Manila, Philippines 1 1 Assistant Chief Defence Staff Assistant Chief Defence S (Support Services) Ministry of Defence, Private Bag, Wellington, New Zealand UNITED STATES OF AMERICA 2 Chief, Food and Nutrition Section, DADST(S) Home Command, NASA - Manned Spacecraft Center, Houston, Texas Ministry of Defence, Private Mail Bag, Wellington, New Zealand U.S. Army Natick Laboratories (Food Laboratory) Natick, Massachusetts, U.S.A. 1 2 PAPUA NEW GUINEA Director, U.S. Army Medical Research and Nutrition Headquarters, Australian Defence Cooperation Group, (HQ ADCG) P.O. Box 2270, Konedobu, Port Moresby Laboratory, Fitzsimons General Hospital, Denver, Colorado, U.S.A. 80240 3 2